Fullagar, Jill

From: dh.oregonwild@gmail.com on behalf of Doug Heiken <dh@oregonwild.org>
Sent: Monday, February 06, 2017 2:27 PM
To: Fullagar, Jill
Subject: OR 2012 - Comments - 303d Impaired Waters

FROM: Doug Heiken, Oregon Wild | PO Box 11648, Eugene, OR 97440 | 541-344-0675 | dh@oregonwild.org
TO: EPA
ATTN: fullagar.jill@epa.gov
DATE: 6 Feb 2017
RE: OR 2012 - 303d Impaired Waters - Comments

Please accept the following comments from Oregon Wild regarding EPS's proposed acceptance/rejection of Oregon's 303d List of Impaired Waters, https://www.epa.gov/tmdl/partial-approvalpartial-disapproval-oregon-2012-303d-list. Oregon Wild represents approximately 15,000 members and supporters who share our mission to protect and restore Oregon's wildlands, wildlife and waters as an enduring legacy.

We appreciate the work that has gone into assembling and reviewing this 303d list. We urge EPA to adopt a comprehensive and accurate list that will help Oregon take necessary steps to protect water quality to meet all beneficial uses.

Ocean Acidification in Oregon's Coastal Marine Waters

We support efforts to recognize declining ocean conditions caused by increasing temperatures and altered pH from increasing CO2 emissions. Listing Oregon's coastal marine waters as impaired will be an effective action-forcing mechanism to motivate Oregon to do its share to reduce GHG emissions.

We support EPA's use of data from marine waters outside of Oregon's 3-mile territorial boundary. This is supported by the fact that the measurement stations with the highest proportion of individual Pteropods exhibiting signs of shell dissolution were located closest to shore.

Approximately half of carbon emitted to the atmosphere is absorbed by the oceans where it contributes to acidification and serious adverse ecological consequences. John Pickrell 2004. Oceans Found to Absorb Half of All Man-Made Carbon Dioxide, National Geographic News, July 15, 2004. http://news.nationalgeographic.com/news/2004/07/0715_040715_oceancarbon_2.html. CO2 has a very long residence time in the atmosphere before it dissolves in the ocean, so there is a degree of "committed acidification" that must be accounted for.

“NOAA and partner scientists have connected the concentration of human-caused carbon dioxide in waters off the U.S. Pacific coast to the dissolving of shells of microscopic marine sea snails called pteropods. … Commercially valuable fish such as salmon, sablefish and rock sole make the pteropod a major part of their diet. … ‘We estimate that since pre-industrial times, pteropod shell dissolution has increased 20 to 25 percent on average in waters along the U.S. West Coast,’ said Nina Bednaršek of the University of Washington.”

Research Links Ocean Acidification To Dissolving Shells Of Pteropods, Key Part Of Marine Food Chain. The Columbia Basin Fish & Wildlifew News Bulletin. Posted Friday, December 02, 2016.

http://www.cbbulletin.com/438037.aspx.

"[H]uman-released CO2 (and related factors) is intensifying the natural fluctuations so that they are more extreme and more frequent, resulting in acidic conditions that are intolerable to some species. For some species, even small changes in ocean carbon chemistry can cause very significant problems." Caren E. Braby 2016. Ocean Acidification Global Warming's Evil Twin. The Osprey. Jan. 2016.

http://jimyuskavitch.com/the_osprey_jan_2016.pdf.

See also: Mathis, J.T., S.R. Cooley, K.K. Yates, and P. Williamson. 2015. Introduction to this special issue on ocean acidification: The pathway from science to policy. Oceanography 28(2):10–15,

http://dx.doi.org/10.5670/oceanog.2015.26. http://www.tos.org/oceanography/assets/docs/28-2_mathis1.pdf.

The effect of climate change on the oceans may in fact be an even more significant threat to life of earth than warming. Howard Lee 2015. You can't rush the oceans (why CO2 emission rates matter). http://www.skepticalscience.com/you-cant-rush-the-oceans.html ("Current human emissions are at a rate comparable to those in Earth's past that triggered powerful global warming and ocean acidification associated with mass extinctions.") See also, Craig Welch 2013. Sea Change: Pacific Ocean Takes Perilous Turn. Ocean acidification, the lesser-known twin of climate change, threatens to scramble marine life on a scale almost too big to fathom. Seattle Times series. http://apps.seattletimes.com/reports/sea-change/2013/sep/11/pacific-ocean-perilous-turn-overview/.

Large Wood Consideration in Biocriteria

We have concerns that biocriteria are not getting the full attention they deserve. We urge EPA to consider additional biocriteria that capture a broader spectrum of aquatic ecosystem health. One example is large wood in streams. Large wood is critical to the proper biological function of streams for fish and other aquatic organisms. Aquatic life in Oregon evolved with very significant inputs of large wood from stream-adjacent forests, slopes, and floodplains. Modern land uses such as forestry and agriculture typically do not provide adequate buffers to ensure that natural levels of large wood are delivered to streams. The 303d list should include streams that currently experience a deficit of large wood or are expected to suffer a shortage of large wood based on vegetation conditions and land uses within 150-300 feet of streams.

Large wood play critical roles in creating optimal habitat for aquatic life.

> Large wood in streams—preferably whole trees with root wads and all—provides the randomness and dynamic environment that fish absolutely need to survive in the ever-changing waters they occupy. Wood breaks up the current and spreads water sideways across its natural floodplain, creating wonderful, dynamic and necessary diversity while also absorbing energy that could cause serious damage downstream otherwise, such as flooding or unnatural erosion. It sorts gravels during high flows, creating those beautiful spawning gravel beds laid out like blankets among bigger rock. It makes those current breaks downstream of log jams. It provides cooling shade and cover, and slow pools and edge habitat that baby fish need after emerging from those gorgeous gravels to ride out high flows, find food

> and hide from prying eyes. Decomposing wood and the nutrients it produces jumpstarts that the natural processes critical to insect, animal, amphibian and plant life.

Alan Moore, Why Fish Love 'Large Woody Debris.' Trout Unlimited. 2-4-2013. http://troutunlimitedblog.com/large-woody-debris-makes-for-fishy-rivers/

Joshua J. Roering, professor of geological sciences at the University of Oregon studies the processes that create fish habitat and concluded: "[Coho salmon] seem to respond to the heterogeneity that is so inherent in most real landscapes. Nature is messy, and the fish have adapted to that." ScienceDaily. http://www.sciencedaily.com/releases/2013/02/130211135045.htm

> Current amounts of large woody debris in coastal streams of Oregon and Washington are a fraction of historical levels (Bilby and Ward 1991, Bisson et al. 1987, NRC 1992). … Stream surveys by private timber companies and federal land management agencies in the Northwest reveal an overall loss of stream habitat quality (FEMAT 1993, Kaczynski and Palmisano 1993, Wissmar et al. 1994) that is strongly related to changes in riparian vegetation, especially harvest of merchantable riparian timber.

Everest, Fred H.; Reeves, Gordon H. 2006. Riparian and aquatic habitats of the Pacific Northwest and southeast Alaska: ecology, management history, and potential management strategies. Gen. Tech. Rep. PNW-GTR-692. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 130 p. http://www.fs.fed.us/pnw/pubs/pnw_gtr692.pdf.

Where streams are degraded, management of riparian forests should strive to meet the high end of the natural range for large wood, not the central tendency. This brings into question the minimum requirements that pervade current standards. Fox & Bolton (2007) recommend -

> In degraded streams, where management is needed to restore favorable conditions, wood loads are often no longer found in the upper distribution of these ranges, or the distribution is centered around a lower mean. In these cases, merely managing for the mean or median will not restore the natural ranges of heterogeneity. Thus, for management purposes intending to restore natural wood-loading conditions, establishing instream wood targets based on the upper portion of the distribution observed in natural systems (i.e., the 75th percentile) rather than the lower portion of the distribution are reasonable as well as prudent to restore natural ranges.

Martin Fox & Susan Bolton (2007) A Regional and Geomorphic Reference for Quantities and Volumes of Instream Wood in Unmanaged Forested Basins of Washington State, North American Journal of Fisheries Management, 27:1, 342-359, DOI: 10.1577/M05-024.1. http://dx.doi.org/10.1577/M05-024.1

Listing streams with a deficit of large wood will require finding the right scale of analysis, recognizing that fish live and die at the site-scale, but wood does move within dynamic stream systems. We expect there to be a strong correlation between instream wood and vegetation conditions on stream-adjacent lands.

Consideration of large wood should be a supplemental biocriteria in addition to macroinvertebrate monitoring.

Sincerely,
/s/

Doug Heiken, Oregon Wild
PO Box 11648, Eugene OR 97440
dh@oregonwild.org, 541.344.0675

Oregon Wild's mission is to protect and restore Oregon's wildlands, wildlife, and waters as an enduring legacy for future generations.